Improving the Climate for Wind Development in North Dakota.

A Grass-Roots Movement.

South Dakota Wind Energy Conference
October 29, 2001, Pierre, SD
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ND Wind Profile

- North Dakota ranks 1st in wind potential
- ND currently has 0.39 MW of installed capacity
- 5 used wind turbines (20-year old equipment)
- 1 NEG Micon 900 kW scheduled for fall 2001



Political Landscape in ND

- Lignite industry
- Net billing conflict
- Misconceptions from 80's
- Old broken-down windmills

- Poor farm economy
- Native Americans
- Out-migration
- Limited transmission capacity



ND Legislature

- Legislature meets every two years
- 1999 Session Minor wind study resolution defeated following testimony from Lignite Industry



ND Electricity Generation Profile

• Coal 4068 MW

Hydro 518 MW

Petroleum 61 MW

Nat. Gas9 MW

Wind
 0.4 MW

Total Gen. Capacity 4656.4 MW

(Over 60% is exported)



ND Rural Electric Cooperatives

- 5 Generation & Transmission Cooperatives
- 17 Distribution Cooperatives
- 230,000 ND customers served by REC's (36%)
- Numerous articles in REC's monthly magazine
 - > Wind is too expensive
 - > Wind is unreliable (intermittent)
 - > Wind turbines will litter the landscape



Local Utility Concerns

- Competition
- Global warming
- Mandates
- Investment in existing plants
- Limited transmission
- Customers being mislead

- Too expensive
- Not dispatchable
- Net billing Who pays?
- Loss of revenue
- Safety
- Equipment damage



Overall Strategy

- Utilize national expertise (DOE, NREL, WPA, NWCC)
- Educate wind advocates (small vs large turbines)
- Stop the net-billing debate
- Focus on utility-scale development
- Level playing field with neighboring states (incentives)
- Establish dialog with all stakeholders
- Wind & coal are complimentary
- Emphasize rural economic benefits of wind development
- Educate communities about wind energy opportunities



Landowner Meeting Strategy

- Identify a local champion
- Explain difference between small & large wind turbines
- Explain the technology
- Focus on utility-scale development
- Emphasize rural economic development benefits
- Discuss barriers to development
- Reach out to REC's, legislators, & local news media
- Encourage formation of wind development groups



North Dakota - Wind Resource Map 104° 102° 98° 100° Agate 1 Lakota Tioga Minot Williston Grand 48° **Forks** Max Jamestown Fargo nestown Dickinson Bismarck Hettinger Edgely 46° 100° 104° 102° 980 40 80 120 160 Kilometers WAPA Study Site Wind Power Classification **Empowerment** 25 100 Miles 0 25 50 75 □ City or Town vvind Power Wind Speed^a Density at 50 m W/m² Wind Speed^a at 50 m Zone Wind Speed^a at 50 m mph Transmission Line Indian Voltage Reservations 5.6 - 6.4 6.4 - 7.0 7.0 - 7.5 12.5 - 14.3 14.3 - 15.7 15.7 - 16.8 16.8 - 17.9 U.S. Department of Energy National Renewable Energy Laboratory 200 - 300 1 Turtle Mountain √ 69 Kilovolts 300 - 400 400 - 500 ↑ 115 Kilovolts Devil's Lake Sioux 500 - 600 7.5 - 8.0★ 230 Kilovolts 3 Lake Traverse Outstanding 600 - 800 8.0 - 8.8 17.9 - 19.7

4

Standing Rock

5 Fort Berthold

✓ 345 Kilovolts

Under Construction

48°

46°

Resource

Potential

Marginal

Excellent

^aWind speeds are based on a Weibull k value of 2.0

Fair

Good

Wind

Power

Class



Accomplishments in the Last 18 Months







Accomplishments in the Last 18 Months (cont.)

- Made more than 85 wind presentations to more than 10,000 North Dakotans
- More than 50 communities pursuing wind development
- 25 new wind monitoring stations established
- More than 20 wind developers have visited ND
- Contracts signed between developers & community groups
- Land-lease agreements signed



Accomplishments in the Last 18 Months (cont.)

- 80 MW bid to Xcel Energy from ND
- 3 wind incentive bills passed (almost unanimously)
- ND Energy Coalition (wind, coal, oil & gas)
- Wind Interests of ND (WIND)
- Wind & coal industries discussing partnerships



Accomplishments in the Last 18 Months (cont.)

- Wind Energy Council in process of formation
- Joint transmission studies planned wind & coal
- More than 10 Distribution Coop's planning greenpricing programs
- All 4 Native American Indian Tribes planning wind projects
- All 3 IOU's have wind projects planned or in place



Next Steps

- Continue and expand wind monitoring program
- Create additional incentives for renewables
- Continue working on transmission issues
- Power marketing
- Foster collaboration with other energy sectors
- Establish Wind Energy Council



The End

Special Thanks to:

U.S. Senator Dorgan & Staff

U.S. Senator Conrad & Staff

ND Governor Hoeven & Staff

ND State Legislature

ND Division of Community Service

U. S. Dept. of Energy

Wind Powering America

National Renewable Energy Lab

U.S. Fish and Wildlife Service

Ducks Unlimited

Energy & Environmental Research Center

American Wind Energy Association

National Wind Coordinating Committee

ND SEED Coalition

Numerous Wind Energy Companies

